

What is claimed is;

1. A driving assist system for a vehicle, comprising:
 - a driving environment detection device that detects a driving environment of the vehicle;
 - a risk potential calculation device that calculates a risk potential present along a longitudinal direction (a RPlongitudinal) and a risk potential present along a lateral direction (a RPlateral) relative to the vehicle based upon the driving environment detected by the driving environment detection device;
 - a longitudinal information conveyance device that presents the RPlongitudinal calculated by the risk potential calculation device to a driver;
 - a lateral information conveyance device that presents the RPlateral calculated by the risk potential calculation device to the driver; and
 - a timing control device that adjust an output timing of the longitudinal information conveyance device and an output timing of the lateral information conveyance device so as to prompt a driver to perform a longitudinal driving operation or a lateral driving operation to stabilize behavior of the vehicle when operation and non-operation of the longitudinal information conveyance device and the lateral information conveyance device are switched.

2. A driving assist system for a vehicle according to claim 1, wherein:

if the operation of the longitudinal information conveyance device and the operation of the lateral information conveyance device have both been stopped and the longitudinal information conveyance device and the lateral information conveyance device are both to start operating, the timing control device allows the output timing of the longitudinal information conveyance device to precede the output timing of the lateral information conveyance device.

3. A driving assist system for a vehicle according to claim 1, wherein:

if both the longitudinal information conveyance device and the lateral information conveyance device have been engaged in operation and the longitudinal information conveyance device and the lateral information conveyance device are both to stop operating, the timing control device allows the output timing of the lateral information conveyance device to precede the output timing of the longitudinal information conveyance device.

4. A driving assist system for a vehicle according to claim 1, wherein:

if one of the longitudinal information conveyance device and the lateral information conveyance device has been engaged in operation and both the longitudinal information conveyance device and the lateral information conveyance device are to be engaged in operation, the timing control device allows the output timing of the longitudinal information conveyance device to precede the output timing of the lateral information conveyance device.

10 5. A driving assist system for a vehicle according to claim 1, wherein:

if both the longitudinal information conveyance device and the lateral information conveyance device have been engaged in operation and one of the longitudinal information conveyance device and the lateral information conveyance device is to stop operating, the timing control device allows the output timing of the lateral information conveyance device to precede the output timing of the longitudinal information conveyance device.

20

6. A driving assist system for a vehicle according to claim 1, wherein:

if an operational change occurs from a state in which one of the longitudinal information conveyance device and the lateral information conveyance device is engaged in operation

25

to a state in which another conveyance device not having been engaged in operation becomes engaged in operation instead, the timing control device allows the output timing of the other conveyance device to precede the output timing of the conveyance device having been engaged in operation.

7. A driving assist system for a vehicle according to claim 1, wherein:

if neither the longitudinal information conveyance device nor the lateral information conveyance device has been engaged in operation, the timing control device allows one of the longitudinal information conveyance device and the lateral information conveyance device to start operating as soon as a change occurs in the driving environment around the vehicle.

8. A driving assist system for a vehicle according to claim 1, wherein:

if one of the longitudinal information conveyance device and the lateral information conveyance device has been engaged in operation, the timing control device stops the operation of the conveyance device having been engaged in operation as soon as a change occurs in the driving environment around the vehicle.

25

9. A driving assist system for a vehicle according to claim 1, wherein:

the timing control device; (a) sets a length of time for a delay to be created in the output timing of the longitudinal information conveyance device and the output timing of the lateral information conveyance device in correspondence to a change in the driving environment around the vehicle and (b) allows the operation of the longitudinal information conveyance device and the operation of the lateral information conveyance device to start/stop in conformance to the length of the delay having been set.

10. A driving assist system for vehicle according to claim 1, wherein:

the longitudinal information conveyance device comprises an accelerator pedal reaction force control device that controls an operational reaction force generated at an accelerator pedal in correspondence to the RPlongitudinal.

11. A driving assist system for a vehicle according to claim 1, wherein:

the lateral information conveyance device comprises a steering reaction force control device that controls a steering reaction force generated at a steering wheel in correspondence to the RPlateral.

12. A driving assist system for a vehicle, comprising:
a driving environment detection means for detecting a driving environment of the vehicle;
5 a risk potential calculation means for calculating a risk potential present along a longitudinal direction (a RPlongitudinal) and a risk potential present along a lateral direction (a RPlateral) relative to the vehicle based upon the driving environment detected by the driving environment
10 detection means;
a longitudinal information conveyance means for presenting the RPlongitudinal calculated by the risk potential calculation means to a driver;
a lateral information conveyance means for presenting
15 the RPlateral calculated by the risk potential calculation means to the driver; and
a timing control means that adjust an output timing of the longitudinal information conveyance means and an output timing of the lateral information conveyance means so as to
20 prompt a driver to perform a longitudinal driving operation or a lateral driving operation to stabilize behavior of the vehicle when operation and non-operation of the longitudinal information conveyance means and the lateral information conveyance means are switched.

25

13. A vehicle driving assist method, comprising:
detecting a driving environment of a vehicle;
calculating a risk potential present along a
longitudinal direction (a RPlongitudinal) and a risk
5 potential present along a lateral direction (a RPlateral)
relative to the vehicle based upon the driving environment;
conveying the calculated RPlongitudinal to a driver;
conveying the calculated RPlateral to the driver; and
adjusting output timing for conveying the
10 RPlongitudinal and output timing for conveying the RPlateral
so as to prompt a driver to perform a longitudinal driving
operation or a lateral driving operation to stabilize
behavior of the vehicle when information conveyance mode is
changed.

15

14. A vehicle, comprising:
a driving environment detection device that detects a
driving environment of the vehicle;
a risk potential calculation device that calculates a
20 risk potential present along a longitudinal direction (a
RPlongitudinal) and a risk potential present along a lateral
direction (a RPlateral) relative to the vehicle based upon
the driving environment detected by the driving environment
detection device;
25 a longitudinal information conveyance device that

presents the RPlongitudinal calculated by the risk potential calculation device to a driver;

5 a lateral information conveyance device that presents the RPlateral calculated by the risk potential calculation device to the driver; and

10 a timing control device that adjust an output timing of the longitudinal information conveyance device and an output timing of the lateral information conveyance device so as to prompt a driver to perform a longitudinal driving operation or a lateral driving operation to stabilize behavior of the vehicle when operation and non-operation of the longitudinal information conveyance device and the lateral information conveyance device are switched.